"A COMPARATIVE STUDY TO ANALYZE THE EFFECT OF RESISTANCE TRAINING WITH ENDURANCE TRAINING VERSUS EFFECT OF RESISTANCE TRAINING WITH BREATHING TRAINING IN HIGH INTENSITY PERFORMANCE CAPACITY OF COLLEGIATE FOOTBALL PLAYERS"

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THE TAMIL NADU DR. M.G.R MEDICAL UNIVERSITY

Towards the partial fulfilment of the requirement for the degree of

MASTER OF PHYSIOTHERAPY

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Submitted by

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CERTIFICATE

The work embodied in the thesis entitled **"A COMPARATIVE STUDY TO ANALYZE THE EFFECT OF RESISTANCE TRAINING WITH ENDURANCE TRAINING VERSUS EFFECT OF RESISTANCE TRAINING WITH BREATHING TRAINING IN HIGH INTENSITY PERFORMANCE CAPACITY OF COLLEGIATE FOOTBALL PLAYERS"** submitted to THE TAMIL NADU DR. M.G.R MEDICAL UNIVERSITY, Chennai-32 in the partial fulfilment of the requirement for the degree of Master Of Physiotherapy(SPORTS Physiotherapy) was carried out by candidate bearing register number **271750121** at Cherraan's College Of Physiotherapy, Coimbatore under my supervision. This is an original work in part or full for any other degree/diploma at this or any other university/Institute. This thesis is fit to be considered at this or any other university/Institute. This thesis is fit to be considered for evaluation of Master of Physiotherapy.

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Internal Examiner

External Examiner

Project work evaluated on _____

DECLARATION

The work embodied in this project entitled **"A COMPARATIVE STUDY TO ANALYZE THE EFFECT OF RESISTANCE TRAINING WITH ENDURANCE TRAINING VERSUS EFFECT OF RESISTANCE TRAINING WITH BREATHING TRAINING IN HIGH INTENSITY PERFORMANCE CAPACITY OF COLLEGIATE FOOTBALL PLAYERS"** was the original work carried out by me and has not been submitted in part or full for any other degree/diploma at this or any other institute/university. All the ideas and references have been duty acknowledgement

_____ _____

Signature of supervisor Signature of student

Mr.A.CHINNASAMY.M.P.T. (SPORTS)

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ABSTRACT

OBJECTIVE: To systematically compare the effectiveness of physiotherapy training like resistance training and endurance training and breathing training on the high intensity performance level of the collegiate football players.

DESIGN: This study is a pre test and post test experimental design comparative in nature.

PARTICIPATION: Thirty subjects aged 19-25 years college football players at college level were selected. The players were trained with resistance, endurance, and breathing training.

OUTCOME MEASURES: The outcome was measured using YO-YO endurance performance test and the high intensity performance capacity was measured.

RESULTS: Statistical analysis done by using paired‘t’ test showed that there was significant improvement in subjects who underwent the training with resistance training with endurance training.

CONCLUSION: Hence, it is concluded that the players who underwent the resistance training with endurance training had a higher performance capacity when compared to the players who underwent resistance training with breathing training.

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INTRODUCTION

CHAPTER I

1. INTRODUCTION

Soccer is one of the most widely played and complex sports in the world, where players need technical, tactical, and physical skills to succeed. Soccer performance has often focused on technique and tactics at the expense of physical resources such as endurance, strength, and speed.

A professional soccer player should ideally be able to maintain a high level of intensity throughout the world game. Speed and power are critical performance factors in soccer. Male soccer players conduct high-intensity actions every 60 to 90 seconds during games, each lasting 2 to 3 seconds on average.

Although sprinting and high- intensity actions represent only 8% to 12% of covered running distance, these capabilities are considerable critical.in this decisive portion of match play, it is likely that maximal-sprint situations represent particularly critical moments. Both horizontal acceleration (sprinting) and vertical acceleration (jumping power) are involved in ball possession, repossession, defense play, corner kicks, and attack on goal.

Because of the importance of players' aerobic and anaerobic endurance capacity, maximizing this capacity is the central element of conditioning training in college football players. Performance control and the design of player-specific training regimens aimed at performance optimization rely on diagnostic methods for the assessment of individual player's (sometimes not fully utilized) potentials and capacities.

Soccer, like every other team game, is a discipline of remarkably acyclic type of movement. In recent years this sport has manifested special development dynamics in the sphere of exercise capacity. The play becomes more and more sophisticated in tactical and technical terms, requiring proficient endurance capacity preparation. Aerobic fitness is an important factor in football.

However, there is still a lack of knowledge considering the relationships between endurance capacity, game performance and game intensity in young college football players furthermore, the most successful teams perform more high intensity activities during a game when in possession of the ball. Hence, footballers need a high fitness level to cope with the physical demands of the game.

Each playing position is characterized by its own activity profile and different tactical requirements in relation to the movement of the ball. Central defenders cover less total distance and high – intensity running, while attackers complete more sprints and a greater portion of high-intensity activity when their own team is in possession of the ball than midfielders and defenders.

Weight training is a common type of strength training for developing the strength and size of skeletal muscles. It uses the weight force of gravity (in the form of weighed bars, dumbbells or weight stacks) to oppose the force generated by muscle through concentric or eccentric contraction. Weight training uses a variety of specialized equipment to target specific muscle groups and types of movement.

Sports whore strength training is central are Bodybuilding, weightlifting, powerlifting, and strongman, highland games, shot put, discus throw, and javelin throw. Many other sports use strength training as part of their training regimen, notably football, wrestling, rugby, track and field, rowing, lacrosse, basketball and hockey. Strength training for other sports and physical activities is becoming increasingly popular.

In study the college football players predominantly underwent resistance training in the form of weight lifting. One group of football players received resistance and endurance training exercise which involved continuous steady paced prolonged exercise in moderate intensities for long distance, and the other group of football players received resistance and breathing exercise as breathing muscles are an integral part of the core stabilizing and postural control systems. This is because the average professional footballer is in motion almost constantly for 90 minutes of play.

To have high endurance begins with breathing ability in competition which will give muscles more energy to work while playing soccer. Developing techniques to breath while exercise and how to breath in competition, gives the edge in high competition by letting the body tap into a person's physical source of energy to keep playing longer than anyone else.

Core/breathing is a interactive relationships for the more use to core movement, the more breath can be developed, then using the core to manage the breath flow during competition which enhance physical endurance. The ideas behind the power of core by breathing are how they are linked together thereby they can develop for greater endurance that enhance performance.

The respiratory muscles need to be trained because during exercise the body's demand for oxygen increases and our breathing value or ventilation must also rise to cope with oxygen increase. For this to work numerous muscles surrounding the lungs need to contract in an exceedingly coordinated manner. As the intensity of the exercise increases, these respiratory muscles must contract more forcefully and more rapidly to keep pace with the body's substantial increase in metabolism.

1.1 NEED OF THE STUDY:

Soccer is a multifaceted sport that requires well developed physical fitness to be successfully played. Although no comparative studies have been performed, physiological match demands (% of maximal heart rate and maximal aerobic power) have been reported to be similar across competitive level and gender in soccer, with any differences being attributable mainly to game intensity (distance covered at high intensity) as a reflection of players' fitness level.

The ability to perform intermittent, high –intensity exercise for prolonged periods plays a key role in competitive soccer. As a consequence, training and testing strategies have been proposed to monitor and enhance payers' ability to perform high- intensity activities during the match.

Resistance training with endurance training may play an important role in the performance of a soccer player. When endurance training is given high intensity activities are improved and help in providing the stamina to play till the end of the game.

Resistance training with breathing training may play an important role in maintaining the lung capacity and the muscle strength of the players. The players approximately cover about 10-12 km during the course of match with an average intensity of 75% to 80% in about 90 minutes, thus breathing exercise enhances their oxygen uptake throughout the game.

There is lack of evidence to improve high intensity performance capacity of collegiate football players.

Thus this study will provide an evidence for a comparison of resistance with endurance training versus resistance with breathing training in high intensity performance of college football players.

1.2 AIM OF THE STUDY:

- A comparative study to analyze the effect of resistance training with endurance training versus effect of resistance training with breathing training in high intensity performance capacity of collegiate football players.

1.3 OBJECTIVE OF THE STUDY:

- To determine the effect of resistance training with endurance training on the high intensity performance level of the collegiate football players.

- To determine the effect of resistance training with breathing training on the high intensity performance level of the collegiate football players.

- To systematically compare the effect of resistance training with endurance training versus effect of resistance training with breathing training in high intensity performance capacity of collegiate football players.

1.4 HYPOTHESIS

The following hypothesis is framed for this study.

NULL HYPOTHESIS:

- There is no significant difference in the high intensity performance capacity of collegiate football players who receive resistance and endurance training.

- There is no significant difference in the high intensity performance capacity of collegiate football players who receive resistance and breathing training.

- There is no significant difference between resistance training with endurance training and resistance training with breathing training in improving high intensity performance capacity of collegiate football players

ALTERNATIVE HYPOTHESIS:

- There is significant difference in the performance of collegiate football players who receive resistance and endurance training.

- There is significant difference in the performance of collegiate football players who receive resistance and breathing training.

- There is significant difference between resistance training with endurance training and resistance training with breathing training in improving high intensity performance capacity of collegiate football players.

1.6 OPERATIONAL DEFINITION:

RESISTANCE TRAINING:

It is also known as strength training, and it is performed to increase the strength and mass of muscles, bone strength and metabolism. It is important for you to gain sufficient muscle strength, because it can help you perform daily activities with ease.

Resistance exercise stimulates the development of small proteins in muscle cells, which will in turn enhance your muscles' ability to generate force **(Campbell 2001).**

ENDURANCE TRAINING:

Aerobic exercise that consists of low to medium intensity levels like running, biking and any other exercise that raises your heart rate and keeps it there for long periods of time.

In the past endurance, most endurance athletes were taught in order to increase stamina one has to increase training time. However, when it comes right down to it – time is only a part of process. How your body uses up lactic acid plays a critical role in increasing stamina and endurance. **(katch and katch 2000) .**

BREATHING TRAINING:

Therapeutic exercises aimed to deepen inspiration or expiration or even to alter the rate and rhythm of respiration **(patricia downie 1993)**. A rhythmic process of expansion and contraction of all respiratory muscles. Breathing to influence the involuntary that regulate blood pressure, heart rate, circulation, and many other body functions.

It uses the breathing techniques to change subtle energies within the body for health and well being **(D. Rakel 2003).**

The process of respiration during which air is inhaled into the lungs through the mouth or nose due to muscle contraction and then exhaled due to muscle relaxation **(Webster medical dictionary 2004).**

YO – YO ENDURANCE PERFORMANCE TEST:

The YO- YO test consists of continuous 20 m shuttle runs performed at increasing speed. YO-YO endurance test level 1 audio tape was used to set the speed of the subjects. Illustration of the YO- YO endurance test track.

REVIEW OF LITERATURE

II. REVIEW OF LITERATURE

Section A: Studies on the performance evaluation in collegiate football players.

Section B: Studies on the effect of resistance training on the performance of collegiate football players.

Section C: Studies on the effectiveness of endurance training on the performance of the collegiate football players.

Section D: Studies on the effectiveness of breathing training on the performance of the collegiate football players

Section E: Studies on the high intensity performance capacity measured by YO- YO performance scale.

Section F: Studies on resistance training with endurance training and breathing training in high intensity performance capacity of collegiate football players.

CHAPTER - II

REVIEW OF LITERATURE

SECTION A

STUDIES ON THE PERFORMANCE EVALUATION IN COLLEGIATE FOOTBALL PLAYERS.

JOSE, et al.,(2010):

The purpose of this study was to analyze the short-term effects of complex and contrast training (CCT) on vertical jump (squat and countermovement jump), sprint (5 and 15 m), and agility (505 Agility Test) abilities in soccer players. Twenty-three young elite Portuguese soccer players (age 17.460.6 years) were divided into 2 experimental groups (G1,n= 9, and G2,n= 8) and 1 control group (G3,n= 6). Groups G1 and G2 have done their regular soccer training along with a 6-week strength training program of CCT,with 1 and 2 training sessions wk, respectively. G3 has been kept to their regular soccer training program. Each training session from the CCT program was organized in 3 stations in which a general exercise, a multiform exercise, and a specific exercise were performed.

The load was increased by 5% from 1repetition maximum each 2 weeks. Obtained results allowed identifying (a) a reduction in sprint times over 5 and 15 m (9.2and 6.2% for G1 and 7.0 and 3.1%, for G2; p, 0.05) and (2) an increase on squat and jump (12.6% for G1 and 9.6% for G2; p, 0.05). The results suggested that the CCT induced the performance increase in 5 and 15 m sprint and in squat jump. Vertical jump and sprint performances after CCT program were not influenced by the number of CCT sessions per week (1 or 2sessionswk21). From the obtained results, it was suggested that the CCT is an adequate training strategy to develop soccer players' muscle power and speed.

HUGUES JULLIEN,et al., (2008):

The present study assessed the effects of specific leg strength training (as part of a broader exercise program) on running speed and agility in young professional soccer players. Twentysix male players (ages 17 to 19 years) were divided into 3 groups. The reference group (Re) performed individual technical work only, the coordination group (Co) performed a circuit designed to promote agility, coordination, and balance control (together with some technical work) and the Squat group (Sq) underwent 3 series of 3 squat repetitions (at 90% of the individual maximum value) and a sprint, before competition of the agility circuit and some technical work. These specific training programs were performed 5 times a week for 3 weeks. Before the experimental session and at the end of each week, all players were assessed using 4 types of tests, (agility, a shuttle test with changes of direction, and 2 sprints over 10 and 7.32 meters, respectively), with completion time being the only performance parameter recorded. Our results indicate that in the short sprints or shuttle sprint with changes in direction, lower limb strengthening did not improve performance. Performance improved in all 3 groups in the agility test but more so in the reference and coordination groups.

Derrick E. Speirs, et al (2016)

The purpose of this study was to investigate the effects of a 5-week lower-limb unilateral or bilateral strength program on measures of strength, sprinting, and change of direction speed. Eighteen academy rugby players (18.1 6 0.5 years, 97.4 6 11.3 kg, 183.7 6 11.3 cm) were randomly assigned to either a unilateral (UNI) or bilateral (BI) group. The UNI group squatted exclusively with the rear elevated split squat (RESS), whereas the BI group trained only with the bilateral back squat (BS). Both groups trained at a relative percentage of the respective 1 repetition maximum (1RM) twice weekly over a 5-week period. Subjects were assessed at baseline and post intervention for 1RM BS, 1RM RESS, 10-m sprint, 40-m sprint, and pro-agility. There was a significant main effect of time for 1RM BS (F1,16 = 86.5, p , 0.001), ES (0.84 , Cohen d , 0.92), 1RM RESS (F1,16 = 133.0, p , 0.001), ES (0.89 , Cohen d , 0.94), 40-m sprint (F1,16 = 14.4, p = 0.002), ES (0.47 , Cohen d , 0.67) and pro-agility (F1,16 = 55.9, p , 0.001), ES (0.77 , Cohen d , 0.89), but not 10-m sprints (F1,16 = 2.69, p = 0.121), ES (0.14 , Cohen d , 0.38). No significant interactions between group and time were observed for any of the dependent variables. This is the first study to suggest that BI and UNI training interventions may

be equally efficacious in improving measures of lower-body strength, 40-m speed, and change of direction in academy level rugby players.

MEHREZ HAMMAMI, et al., (2018):

A study on effect of contrast strength and plyometric training on lower limb explosive performance, ability to change direction and neuro muscular adaptation in soccer players. The aim was to compare the effect of two different 8 weeks contrast training and plyometric training on change of direction and counter movement jump, leg peak power on a cycle ergometer. 40 soccer players were taken for study age 15, BMI 58.8 were divided into two groups. The result EMG parameter shows significant increase in both groups. The improvement of physical performance was better with 8 weeks of CST than with PT. They conclude that contrast training can be used as a effective method on improving ability to change direction among soccer players.

J STRENGTH, et al.,(2017):

Studies on effect of standard strength vs contrast strength training on development of sprint ability and jump junior soccer players. The players were divided into two groups. ST n=16 and CST n=16 age 16.0. The intervention are 5 meters sprint 9-3-6-3-9m sprint 180degree turn with backward and forward running repeated shuttle sprint ability squat and counter movement jump. They RCOD parameters show significant improvement SG and CG. They conclude that during the comparative session some measures of athletic performance in male soccer player were increased in CT group

SECTION B

STUDIES ON THE EFFECT OF RESISTANCE EXERCISE ON THE PERFORMANCE OF COLLEGIATE FOOTBALL PLAYERS.

Gilderset.,et.al(2007)

states that the effects of a 10 week. Periodized, off-season resistance-training program and creatine supplementation among collegiate football player proved to increase the performance capacity among football.

George .,et al(1997)

States dynamic resistance exercise reduces resting systolic and diastolic blood pressure in adults. However, it is premature to form strong conclusions regarding the effects of dynamic resistance exercise on resting blood pressure and a recommendation is made regarding the efficacy of dynamic resistance exercise as a non pharmacological therapy for reducing resting blood pressure in adults, especially in hypertensive adults.

Kwon.,et.al(2010)

Found that the lower intensity resistance training was effective in increasing in muscle mass and strength and reducing total fat mass without change of insulin sensitivity in type 2 diabetic patients. During intervention, a greater increase in muscle mass and greater decrease in both total fat mass and abdominal fat was observed in RG compared to those of CG.

Hajghanbari.,et.al(2013)

States that the effects of respiratory muscle training on increases the performance in athletes – meta analyses demonstrated a significant positive effect of RMT on sport performance outcomes of time trails exercise endurance time, and repetition on Yo-Yo tests. Inspiratory muscle strength and endurance improved in most studies, which in part, was dependent on type of RMT employed.

Kristi.,et.al. (2000)

Examined the effects of progressive resistance exercise on resting systolic blood pressure in adult humans. It was concluded that progressive resistance exercise is efficacious for reducing resting systolic and diastolic blood pressure in adults. However a need exists for additional studies that limit enrollment to hypertensive subjects as well as analysis of data with an intention-to-treat approach before the effectiveness of progressive resistance exercise as a non pharmacological intervention can be determined.

SECTION C

STUDIES ON THE EFFECTIVENESS OF ENDURANCE EXERCISES ON THE PERFORMANCE OF THE COLLEGIATE FOOTBALL PLAYERS.

Mc millan,et.al(2001)

States that the physiological adaptation to soccer specific endurance training in professional youth soccer players increased during competitive soccer much play, elite players cover a distance of about 10-12km at an average intensity close to the anaerobic threshold, being 80-90% of maximal heart frequency (Hf_{max}) or 70-80% of maximal oxygen uptake (vo_{2max}). It is estimated that aerobic metabolism provides 90%of the energy cost of soccer match play.

Juarez.,et al(1996)

Examined the acute effects of endurance exercise on jumping and kicking performance in young soccer players. Two force platforms were used to obtain the following parameters during the countermovement jump, jump height, maximum power, maximum power relative to body mass, maximum vertical ground reaction force, maximal ground reaction force relative to body mass and maximum vertical ground force applied to each leg. Maximum vertical ground reaction force and maximum vertical ground reaction force relative to body mass applied to the support leg kicks were also calculated with a force platform. Non significant differences were found in parameter measured during counter movement jump and the maximal instep soccer kick test before and after running suggesting that the jumping and kicking performance of top class young soccer layer were not significantly affected after 20 min treadmill running at 80% of their individual maximum heart rate.

Shaher,et.al(2001)

States the effect of 40 m repeated sprint training on physical performance in young elide male soccer players.

Subjects were randomly assigned to one of two groups: A training group and a control group. A training group followed a repeated sprint training program twice a week. The results indicate significant improvement within the training group from pre to posttest in repeated time.

The control group showed notable improvements in repeated sprint time. A comparison between groups indicates that there were Marked difference between two groups. It was concluded that repeated sprint ability is trainable and the larger improvement within the training groups as compared to the control could be explained by extra weekly repeated sprint training.

CASTAGNA.,ET AL(2009)

State that specific endurance determined by YO -YO IRI performance, positively affects physical match performance in male young player

The purpose of the study was to examine the effect of specific endurance (Yo-Yo intermittent recovery test level 1 yo-yo iri) on match performance male youth soccer. The study‘s result showed the improvement in the performance of the players.

SECTION –D

STUDIES ON THE EFFECTIVENESS OF BREATHING EXERCISE ON THE PERFORMANCE OF THE COLLEGIATE FOOTBALL PLAYERS

Edwards, et al (1999):

They stated that inspiratory muscle training exercise tolerance in recreational soccer players without can concomitant gain in soccer specific fitness. There may be benefit for soccer players to incorporate IMT to their pre-session training stimulus would be particularly meaningful for these population, if fitness gains are a priority and also evoke a stronger IMT response.

Romerit.,et al (1997):

They stated that study provide new evidence that IMT improve recovery time during high intensity, intermittent exercise in repetitive sprint athlete. The study examined the influence Inspiratory muscle training upon recovery time during repetitive sprint activity, as well as the physiological and perceptual responses to fixed intensity shuttle running.

Tong .,et al(2000):

They stated that both IMT and warm- up training improve the tolerance of intense intermittent exercise; the underlying mechanism may be different. The effects of inspiratory muscle training on maximal 20 m shuttle run performance on yo- yo intermittent recovery test and on physiological and perceptual response to the running test were examined.

Mitch lomax.,et al(2010)

They states that the pre –training Premix and distance covered increased similarly between after the warm-up. premix and distance covered , increased after training in the experimental group. The training f inspiratory muscle warm-up can both improves running distance independently, but the greatest increased in observed when they are combined.

SECTION E

STUDIES ON THE HIGH INTENSITY PERFORMANCE CAPACITY MEASURED BY YO- YO PERFORMANCE SCALE.

Baumann.,et.al: (2005)

States that the YO –YO scale proved to be a feasible instrument to assess both the performance level of the college football players and sprinters. It may also be of use to the physician and physical therapist responsible for monitoring progress during rehabilitation after football injuries.

Seiler.,et.al (2008)

States that the relationship between endurance capacity, game performance and estimated accumulation of fatigue in young college football players was estimated from the YO_YO endurance test level and the game intensity decreased significantly between the two halves due to accumulation of fatigue and that game intensity measured as relative heart rate gradually increased with increasing age.

Helgerud.,et.al. (1996)

States that there is a significant effect of inspiratory muscle training on maximal 20 m shuttle run performance during YO_YO intermittent recovery test and on the physiological and perceptual responses to the running test were examined on the sprinters.

Yamabayashi,.et.al (2008)

States that the YO-YO IRI test evaluates an individual's ability to repeatedly perform intermittent exercise with a high aerobic component towards the end of the test. Evaluations of elite athletes in various sports involving intermittent exercise showed that the higher the level of competition the better an athlete performs in the YO-YO IR tests.

SECTION F

STUDIES ON RESISTANCE TRAINING WITH ENDURANCE TRAINING AND BREATHING TRAINING IN HIGH INTENSITY PERFORMANCE CAPACITY OF COLLEGIATE FOOTBALL PLAYERS.

Faigenbaumet.,et.al. (2007)

Compared the effects of a six weak training period of combined endurance and resistance training or breathing training along on fitness performance in boys (12-15 yr). The finding suggest that the addition of endurance training to a resistant training program may beneficial than resistance and breathing training for enhancing selected measures of body power in boys.

Macdonaldet.,et.al (2001)

States that repeated endurance ability is trainable and the larger improvement with in the training group as compared to the control group could be explained by the extra weakly repeated endurance training.

Subjects were randomly assigned to one of two groups: a training group and control group. The training group followed a repeated endurance training program twice a weak. The results indicate significant improvement with in the training group from pre to post test in repeated sprint time. The control group results showed notable improvements in repeated sprint time. A comparison between groups indicates that there were marked difference between the two groups.

Freedman.,et.al (2007)

States that the training of inspiratory muscle warm up can both increase running distance independently, but the greatest increase in observed when they are combined. The inspiratory muscle warm-up and inspiratory muscle training separate and combine effects on intermittent running to exhaustion. The independent and the combined effects of an inspiratory muscle warm-up and inspiratory muscle training on intermittent running to exhaustion were found.

Palmer,.et.al (1999)

States that significant difference of the threshold running speed among individual teams were present between the level of exercise capacities to the loads occurring at the lactate threshold among soccer players representing different level of sport mastery.

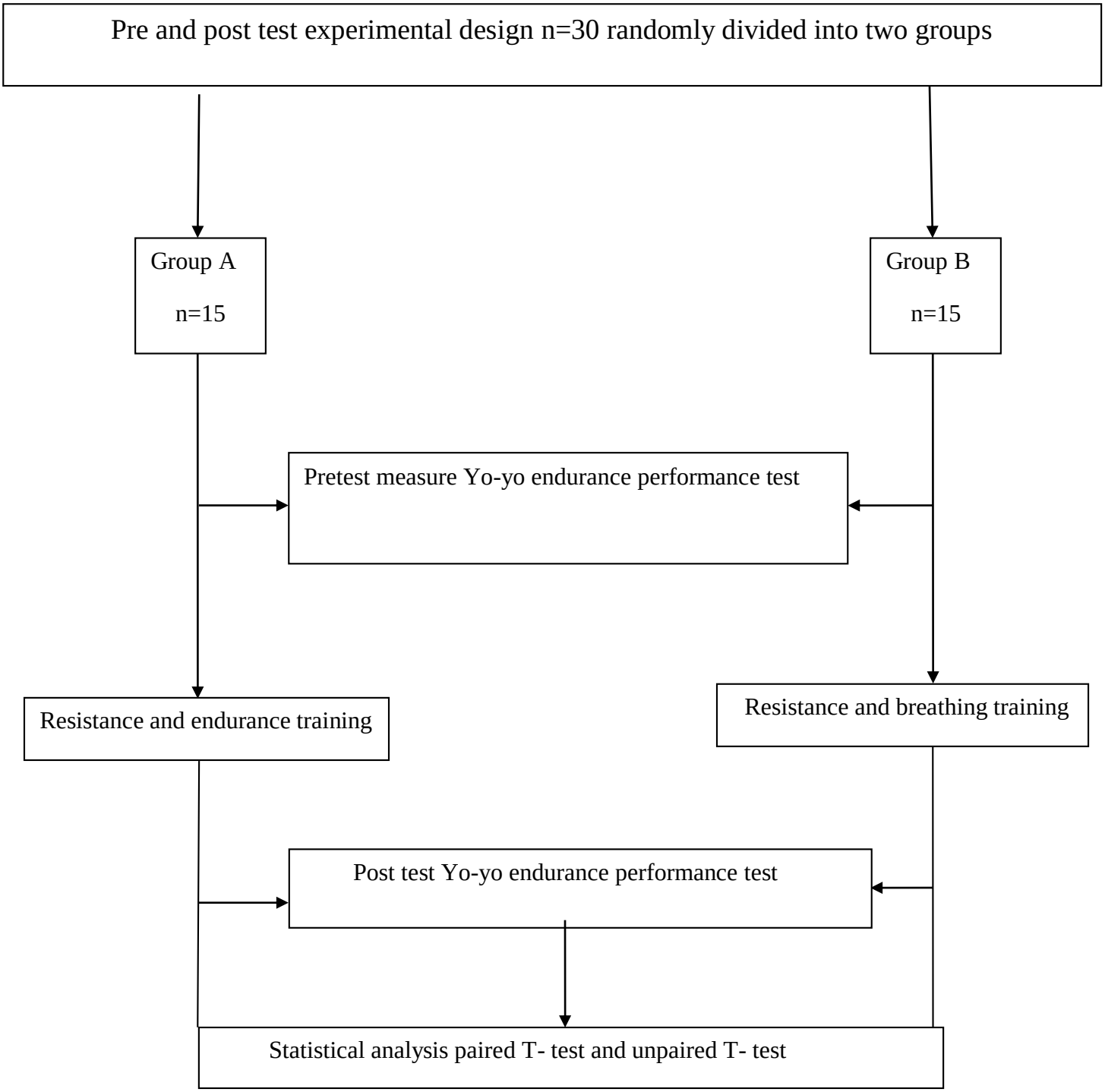
Tonnessen,.et.al (2004)

States that resistant training with endurance training increase high intensity performance capacity of college football players when compared to the players who received resistant training with breathing training.

METHODOLOGY

CHAPTER III

MATERIALS AND METHODOLOGY



CHAPTER III

3.1METHODOLOGY

3.1.1 STUDY DESIGN:

- The study was a pre test and post test experimental design comparative in nature.

3.1.2 STUDY SETTING:

- The study was conducted in college students of- cherraan's College of physiotherapy.

3.1.3 STUDY DURATION:

- The study was conducted for 3 months

3.1.4 SAMPLING METHOD:

- Subjects were selected by simple random method

3.1.5 SUBJECTS:

- Thirty subjects who fulfilled inclusion and exclusion criteria were selected for the study. Out of them 15 were randomly assigned to group A for resistant and endurance training and the other 15 were assigned to group B for resistant and breathing training.

3.2 CRIERIA FOR SELECTION

3.2.1 INCLUSION CRITERIA

- Elite football players.
- Age: 19-23 years.
- Gender :Male
- Player with 2 Year Experience.
- The subjects who were willing to participate.
- Mid field players.
- The subjects who were clinically stable before study.

3.2.2 EXCLUSION CRITERIA

- Recent injury in lower limb.
- Goal keeper.
- Sub elite players.
- Muscle tear.
- Reduced cardiovascular endurance.
- Players undergoing specific training
- The subjects who have had a recent surgery.
- Any other systemic pathology.

3.3 MATERIALS:

- Dumbbell
- Stopwatch
- Football
- Inch tape
- Chalk powder
- Whistle
- stools

3.4 VARIABLES

INDEPENDENT VARIABLES:

- Resistance with endurance training.
- Resistance with breathing training.

DEPENDENT VARIABLE:

- High intensity performance capacity.

3.5 MEASUREMENT TOOLS:

- Yo –Yo endurance performance test.

3.6 PROCEDURE:

3.6.1. MEASUREMENT PROCEDURE

The players were also tested in yo-yo endurance fitness test level 1 estimate their aerobic capacity from the distance covered in the test (bangsbo 1996). this test was used as it is one of the most common ways to measure endurance performance of the collegiate football players.

The yo-yo test consists of continuous 20-meter shuttle runs performed at increasing speed. yo-yo endurance test level 1 audio type was used to set the speed of the subjects. illustrate of the yo-yo endurance test track.

The simple illustration of the yo-yo endurance test track. (modified from bansbo 1993)

The subjects began to run forwards for 20 meters at the time of the first signal and adjusted their speed so that they would reach the 20 meter maker at the exact time of the next sound signal. at the 20 meter maker the subjects turned and run back to the first maker which once again had to be reached at the time of the next audio signal. this was then repeated time. after 10 minutes find out how many repetition are done by the players.

3.6.2 TRAINING PROCEDURE

RESISTANCE TRAINING PROTOCOL:

Total exercise duration: 20 min twice a day

Warm up exercise: 3 min

A dumbbell half squat: 10 times with 12kg weight for both hands (dumbbells).

Bench set up: 10 times with 12kg weight for both hands (dumbbells).

relaxation: 3 minute

A DUMBBELL HALF- SQUAT:

The players ae advised to be relaxed before training and following warm up sessions. the players must be standing position and handle the fixed weight dumbbells in both their hands. the players must stretch their upper limbs in forward, straight, and upright position and do the half squat position in straiht manner. they have to maintain the half squat position for 20 seconds or 20 counts. after that they can relax and stand in the same holding position. they can relax their arms with the dumbbells in hand. This was repeated for 10 times. The relaxation time was given.

Bench step-ups:

The players were asked to stand in upright position and the dumbbells were given in their hands. The players were asked to step up on the bench, stand on1 leg and flex the other and raise their hands forward, and hold it in that position in 10 seconds or 10 counts. They were asked to repeat it on alternative leg. The players were asked to relax and step down from the stool.

ENDURANCE TRAINING PROTOCOL:

Total duration: 30-40 minutes

Warm up exercise: 3 minutes

Jogging and running: 10 minutes

Four line sprint: 10 minutes

Three corner run: 10 minutes.

Relaxation: 3 minutes

Four- line sprint:

The players were given instructions about training. Four line marks were made in the zigzag position and on the signal "Ready go," the players ran 10 meters from the first line mark to the second line mark. Then they turn, run from the second line mark to the third line mark. Then they turn again from the third line mark and finishes at the fourth line mark between two flag posts. The players were given each 10 repetitions per sessions.

Three- Corner Run:

The players were given instructions about the training. Three line marks were made in the triangular position and on the signal "Ready Go," the players run 10 meters from the first line mark to the second line mark. Then they turn, run from the second line mark to the third line mark. Then they turn again from the third line mark and finishes at the first line mark at the starting flag posts. The players were given each 10 repetitions per sessions.

Breathing training:

Total duration: 20 minutes

Positioning: sitting position

Technique: breathing training

Procedure:

The diaphragmatic breathing exercise is usually taught in relaxed sitting position. The players were asked to sit in straight and upright position with the head and back fully supported and the abdominal wall relaxed. The players himself can place his hands on the anterior costal margin and the upper abdominal to feel the movement occurring. Players start by gently breathing in through the nose, hold their breath about 5 to 10 seconds, and breath out forcefully in the lateral side through the nose. The players can practice both the hands over the abdomen to feel the gentle movement that results as a result of diaphragmatic movement. The upper chest and the shoulders remain relaxed throughout.

DATA ANALYSIS AND RESULTS

CHAPTER IV

DATA ANAYSIS AND RESULT

Data analysis:

The data collection from 30 subjects were evaluated statistically. Descriptive analytical study was done by using paired ‘t’ test.

MEAN

$$\bar{d} = \sum \frac{d}{n}$$

STANDARD DEVIATION

$$\mathbf{SD} = \sqrt{\sum \frac{(d-\overline{d})^2}{n-1}}$$

PAIRED “t” TEST

$$\mathbf{t} = \frac{\bar{d}\sqrt{n}}{S.D}$$

Where,

$\bar{d}$ = calculated mean difference pre-test and post-test.

n = sample size.

SD = standard deviation.

d = difference between pre and post-test.

UNPAIRED “t” TEST

The unpaired t -test was used to compare the statistical significant difference between group A and group B

FORMULA

$$\mathbf{s} = \sqrt{\frac{(n_1-1){sD_1}^2+(n_2-1){s_{D2}}^2}{n_1+n_2-2}}$$

$$\mathbf{t} = \frac{\bar{x}_1-\bar{x}_2}{s\sqrt{\frac{1}{n_1}+\frac{1}{n_2}}}$$

n_1 = total number of subject in group A.

n_2 = total number of subject in group B.

x_1 = difference between pre-test & post-test values of group A.

x_2 =difference between pre-test & post-test values of group B.

$\bar{x}_1$ = mean difference between pre-test & post-test value of group A

$\bar{x}_2$ = mean difference between pre-test & post-test value of group B.

WITHIN GROUP ANALYSIS OF GROUP A:

Test	mean	Mean difference	Standard deviation	Paired t- test	P -value
Pre test	9.86	3.27	0.484	6.150	<0.05
Post test	13.13				

TABLE NO: 01: Within group A

Since the calculated ‘’t’’ value is 6.15 more then “t” table value 1.761 at 0.005 above values shows that is significant in high intensity performance among group B.

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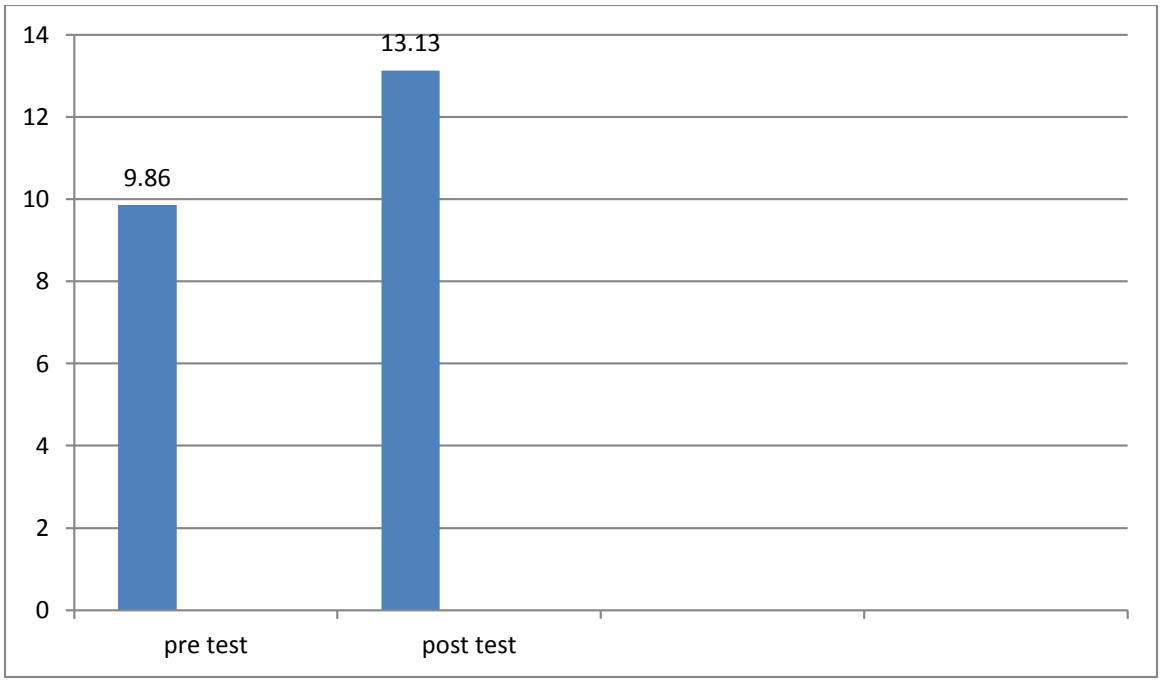


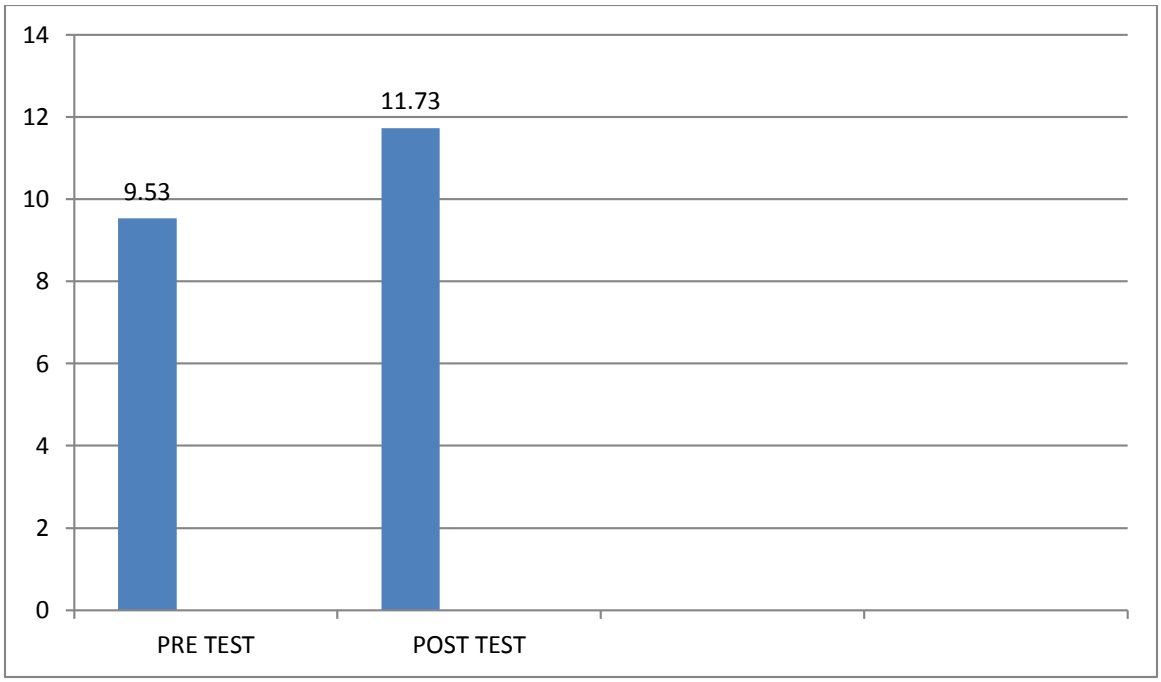
GRAPH NO:01: Graphical representation of within group analysis of group A.

WITHIN GROUPANALYSIS OF GROUP B:

Test	mean	Mean difference	Standard deviation	Paired t- test	P -value
Pre test	9.53	2.2	0.392	3.2908	<0.05
Post test	11.73				

TABLENO:02: within in group B

Since the calculated ‘’t’’ value is 3.290 more then “t” table value 1.761 at 0.005 above values shows that is significant in high intensity performance among group B.



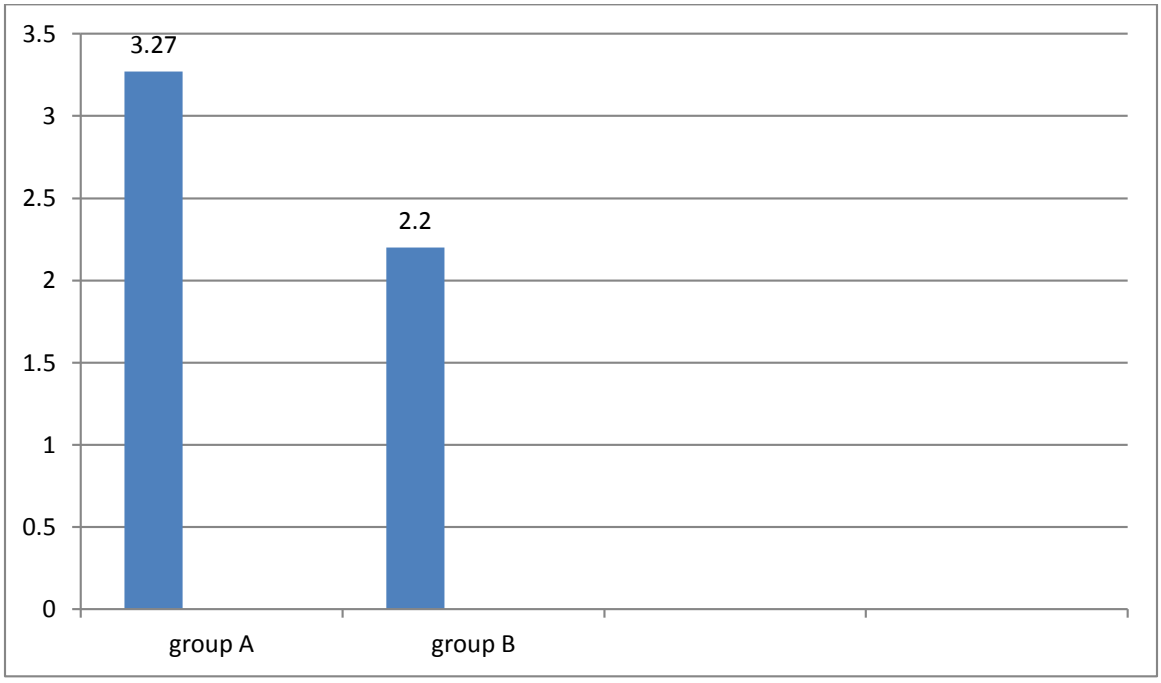
GRAPH NO: 02: Graphical representation of within group analysis of Group B.

BETWEEN GROUP ANALYSIS :

Test	mean	Mean difference	Standard deviation	Paired t- test	P -value
Group A	3.27	1.07	1.86	1.969	<0.05
Group B	2.2				

TABLE NO: 03: between group analysis of group A& group B

Since the calculated ‘’t’’ value is 1.969 more then “t” table value 1.699 at 0.005 above values shows that is significant in high intensity performance among group B.



GRAPH NO: 03: Graphical representation of between group analysis of group A and group B

DISCUSSION

CHAPTER V

DISCUSSION:

A professional soccer players be able maintain a high Level of intensity throughout the whole game. Speed and power are critical performance factors in soccer.

Male soccer payers conduct high intensity actions every 60 to 90 seconds during games , each lasting 2 to3 seconds average. Although sprinting and high intensity actions represent only 8 to 12 percentage of covered running distance, these capabilities are considered critical . In this decisive portion of match play, it is likely that maximal sprint situations represent particularly critical moments.

Both horizontal acceleration (sprinting) and vertical acceleration (jumping power) are involved in ball possession, repossessions, defense play corner kicks, and attack on goal. Because of the importance of players aerobic and anaerobic endurance capacity, maximizing this capacity is the central element of conditioning training in collegiate football players.

Performance control and the design of player specific training regiments aimed at performance optimizing rely on diagnostic methods for the assessment of individual players (sometimes not fully utilized) potentials and capacities .

Henri lehto , et al 2002 , states that the relationship between endurance capacity , game performance and estimated accumulation of fatigue in young collegiate football players was estimated from the Yo - Yo endurance Test level and the game intensity decreased significantly between the two halves due to accumulation of fatigue and that game intensity decreased significantly between the two halves due to accumulation of fatigue and that game intensity measured s relative heart rate gradually increased with increasing age.

The major physiological and performance effects of aerobic high intensity and speed endurance training in football , and provides insight on implementation of individual game related physical training . Analysis and physiological measurements have revealed that modern football is highly energetically demanding, and the ability to perform repeated high intensity work is of importance for the players.

Thirty players were selected in this study in consecutive manners. Their high intensity performance capacity as measured using Yo Yo endurance performance test. The study supports alternative hypothesis. The analysis of the study shows that high players who received resistance and endurance exercises had a better performance than the players who received resistance and breathing exercise.

To improve the high intensity performance capacity we used the resistance exercise and endurance training in group A by using the Yo-Yo endurance performance scale. The pretest value shows 148 repetitions done by total subjects and the post test value shows 197 repetitions done by the same players. The mean difference was 49 repetitions.

Group B received resistance training and breathing training and their pretest values were 143 repetitions and their post test value were 176. The mean difference 33 repetitions. Thus indicates the high intensity performance capacity can be increased in both training exercises. The collegiate football players who received the training increased their capacity of fitness and performance level of activities. The pretest and post test mean values for the players receiving the resistance exercise with endurance training are 9.86 and 13.13 respectively .The mean difference is 3.27 .thus this shows there is improvement achieved after the post test.

The pretest and posttest mean values for the players receiving the resistance exercise with breathing training are 9.53 and 11.73 respectively. The mean difference is 2.2 . Thus shows there is improvement archived after the post test.

When compared within the two groups both the groups both the groups show improve in the pre test ,posttest and mean values, But the group A mean value is 3.27 and mean value of group B is 2.2se groups .these show a mean difference is 1.07 .the mean difference shows A has more improvement in their performance capacity than group B

The physiological changes that occur to who are receiving the resistance training are increase in muscle power due to the use of dumbbells, the whole upper and lower limb muscle tension increase and the muscles are strengthened. Holding capacity increases and stamina increases.

During the endurance training the fitness level increases because the anaerobic capacity increases. During the training period individual performance capacity increases. The stamina and the level of each player increases and enhances high intensity playing capacity.

Due to breathing training the players have an improvement in their lung capacity and their breathing during the play is controlled. Their anxiety is reduced. Blood circulation is maintain evenly throughout the game.

This study gives a strong study support that the high intensity performance capacity improved in the first group who received resistance and endurance training than the second group who received resistance and breathing training. The first group had a better capacity and showed an improvement faster than the second group.

CONCLUSION

CHAPTER VI

CONCLUSION:

- A comparative study was conducted to assess the high intensity performance capacity in resistance training with endurance training versus resistance training with breathing training in football players.
- Thirty players were selected in this study in consecutive manner.
- Their high intensity performance capacity was measured using the YO – YO endurance performance test. The study supports the alternative hypothesis. The analysis of the study shows that the players who received resistance and endurance training had a better performance than the players who received resistance and breathing training.

LIMITATION AND SUGGESTION

CHAPTER VII

LIMITATION AND SUGGESTION

LIMITATIONS:

- It was a short duration of study.
- Subjects with 19 to 23 year of age were included in this study.
- Only male player were selected.
- Only elite player were selected.
- YO – YO endurance performance test were used to test high intensity performance of capacity of football player.
- Certain factor such as nutritional factors, psychological status could not control during the period of study.

SUGGESTIONS:

- Subjects above 19 year of age can also be included in the upcoming studies.
- The study can be done with female player.
- Similar study can be done number of subjects.
- More research in both interventions with consistent outcome measure.
- Similar study can be done with district players, zonal players, state players, and other sports such as athletes, hockey players, etc.

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CHAPTER VIII

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ANNEXURE

CHAPTER IX

ANNEXURE I

ASSESMENT CHART

Name :

Age :

Gender :

Height :

Weight :

BMI :

Year of experience :

Position of game :

Training period :

ANNEXURE II

CONSENT FORM

I……..aged…….Mrs., voluntarily consent to participate

The research named **"A COMPARATIVE STUDY TO ANALYZE THE EFFECT OF RESISTANCE TRAINING WITH ENDURANCE TRAINING VERSUS EFFECT OF RESISTANCE TRAINING WITH BREATHING TRAINING IN HIGH INTENSITY PERFORMANCE CAPACITY OF COLLEGIATE FOOTBALL PLAYERS"** The researcher has explained me the treatment approach in brief, risk of participation and has

Answered all the questions pertaining to the study to my satisfaction.

Signature of Subject **Signature of Researcher**

Signature of Witness

ANNEXURE III

YO- YO ENDURANCE PERFORMANCE TEST:

The players were also tested in yo-yo endurance fitness test level 1 estimate their aerobic capacity from the distance covered in the test (bangsbo 1996). This test was used as it is one of the most common ways to measure endurance performance of the collegiate football players.

The yo-yo test consists of continuous 20-meter shuttle runs performed at increasing speed. Yo-yo endurance test level 1 audio type was used to set the speed of the subjects. Illustrate of the yo-yo endurance test track.

The simple illustration of the yo-yo endurance test track. (modified from bansbo 1993) The subjects began to run forwards for 20 meters at the time of the first signal and adjusted their speed so that they would reach the 20 meter maker at the exact time of the next sound signal. At the 20 meter maker the subjects turned and run back to the first maker which once again had to be reached at the time of the next audio signal. This was then repeated time, after 10 minutes find out how many repetition are done by the players.

ANNEXURE IV

MASTER CHART -1

Pre and post test YO-YO endurance performance test value of high intensity performance capacity among group A

SI.NO	PRE-TEST	POST-TEST	$d - \bar{d}$	$(d - \overline{d})^2$
1	8	11	3	9
2	10	15	5	25
3	9	14	5	25
4	11	14	3	9
5	8	12	4	16
6	10	14	4	16
7	8	11	3	9
8	11	13	2	4
9	10	12	2	4
10	12	15	3	9
11	9	12	3	9
12	11	14	3	9
13	10	13	3	9
14	12	16	4	16
15	9	11	2	4

MASTER CHART -2

Pre and post test YO-YO endurance performance test value of high intensity performance capacity among group B

SI.NO	PRE-TEST	POST-TEST	$d - \bar{d}$	$(d - \overline{d})^2$
1	8	10	2	4
2	10	12	2	4
3	11	13	2	4
4	8	10	2	4
5	12	15	3	9
6	11	13	2	4
7	9	11	2	4
8	10	12	2	4
9	9	11	2	4
10	8	10	2	4
11	9	12	2	4
12	10	12	2	4
13	11	13	2	4
14	9	11	2	4
15	8	11	2	4